

ABSTRACT

A control device for an exhaust gas sensor is provided to judge the deterioration of a sensor element in real time and promptly complete an activity judgment in an exhaust gas sensor warm-up sequence without resort to learning. An air-fuel ratio sensor is mounted in an exhaust path of an internal combustion engine. The air-fuel ratio sensor is equipped with a sensor element that becomes active when an activity temperature is reached. If the activity of the air-fuel ratio sensor is not judged, a judgment is made whether an element impedance Z of the sensor element is not greater than an activity judgment value Z_{act} (condition A), and whether an intake air amount cumulative value GA_{sum} is not smaller than a sensor activity judgment intake air amount cumulative value GA_{sumtg} (condition B). When either of the two conditions is satisfied, activity of the air-fuel ratio sensor is judged.